

State of Washington

***Strategic Information
Technology Plan***

October 1996

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I. Introduction and Summary

One of the greatest challenges faced by Washington state agencies is to meet their increasing service responsibilities with fewer resources. This plan, mandated by the Information Technology Act of 1992 and descendant of the original Strategic Information Technology Plan published in 1993, continues efforts to coordinate the deployment of information technology (IT) resources within state government.

The first plan set forth goals and strategies to help agencies develop their individual information technology plans within a shared planning framework. Each agency could draw from its list of strategies as appropriate for its circumstances. The 1993 Plan encouraged program executives and technology professionals within individual agencies to “forge a stronger partnership.”

This revised plan expands the partnership emphasis across agencies to improve collaboration in planning and to promote greater sharing of data and information resources among state organizations. It envisions a seamless statewide infrastructure for information technology. This infrastructure should enable citizens to obtain state services without regard to bureaucratic or organizational boundaries.

Both the Legislature and the Information Services Board (ISB) have made clear their expectations for inter-agency cooperation in the planning and sharing of IT resources. This plan translates those expectations into a charter and identifies some basic questions which agencies should anticipate when submitting IT plans or requesting IT funding. The strategies contained in the 1993 strategic plan have been refined to focus on building shareable information technology infrastructure.

This plan reaffirms the basic goals set forth in the 1993 plan:

- *Improve service delivery to the public through the use of information technology.*
- *Make information more accessible through an affordable, shared and widely used information technology infrastructure.*
- *Use information technology to respond quickly to changing business requirements.*
- *Invest in people, tools, methods and partnerships necessary to improve the knowledge and skills of the human resources within the IT community.*

While the fourth goal may be more accurately characterized as a strategy than a goal, it is reaffirmed here as a goal to underscore its importance to the overall success of the state's strategic use of IT.

The 1993-1995 Performance Report¹ evaluated the state's progress toward meeting the goals of the 1993 IT Strategic Plan during the last biennium. The report documented agency-specific progress on improved networking and data management that contributed to increased public access to government information, improved service delivery to citizens and greater economic efficiencies within government. It also found that the biennium was characterized by an increased reliance on IT partnerships: "These partnerships cross a number of jurisdictional lines, bringing together an unprecedented number of state agencies, federal departments, local governments, educational institutions, private companies and not-for-profit entities to work co-operatively on common technology projects." Taken together, and through the adherence to state standards, these initiatives have contributed to a shared infrastructure that will be the foundation for subsequent technological advances.

Additional business challenges face the state and its individual agencies. Government leaders assert that their citizen-customers want agencies to improve service through greater flexibility and responsiveness. The Legislature expects to see economic efficiencies in the deployment and use of information technology. In the past, the individual agencies deployed technology for their specific purposes, without regard to integration and interoperability with other agencies. In many cases, integrating these stand-alone systems is complex and costly.

At the same time, the information technologies are undergoing rapid and profound change. Advances in technology often occur so rapidly that once state-of-the-art technology which an agency has purchased at great expense may become antiquated or obsolete long before the end of its anticipated useful life. Agencies acquiring information technology must anticipate and prepare for possible technological advances.

To maximize efficiencies, it is imperative that the state's IT systems work as a wholly integrated and non-duplicative network. Interagency coordination is necessary if agencies are to select the most appropriate IT tools and services available in the market consistent with statewide infrastructure goals. It is also necessary if agencies and local

¹ Department of Information Services, Strategic Computing and Planning Division, *Becoming Digital: Washington State's Performance In The Use of Information Technology*, 1993-1995 Biennial Information Technology Review (July 1996) (hereafter "Performance Report"). This report is mandated by RCW 43.105.160(2).

governments are to leverage their combined purchasing power as a volume-buying cooperative.

In sum, the ISB and the Department of Information Services (DIS) strive for an approach to IT deployment which:

- continues support for agency innovation;
- ensures agency accountability
- maximizes interoperability;
- minimizes duplication of networks and services;
- encourages shared use of common resources; and
- ensures that the state leverages its purchasing power.

Agencies must improve service, make information more accessible, and respond to change through the creative use of information technology. Meeting these goals is dependent upon cooperation and collaboration among agencies. This plan sets forth the strategies that will move state government in this direction.

II. A Vision of the Future

Joan has to renew her driver's license and license a new car. She knows she has several choices about where and how to do both. She can visit the licensing office and through one visit with a service representative conduct all her business. She can visit a state electronic kiosk located at her neighborhood supermarket. She can contact state government through a home computer or a public library computer on the Internet. Each of these alternatives allows her to pay with a credit card or a bank debit card. She chooses to renew her license and license her car while grocery shopping, and does so in a matter of minutes.

Mary Lou is a journalism student at a regional four-year university. Her school does not offer courses in development communication, so her academic advisor suggests that she sign up for Professor Giffard's course at the University of Washington. Twice a week she visits her campus's teleconferencing center, and joins six other students as they watch, listen, and participate in a virtual classroom linking the professor in Seattle and students at several campuses. On this particular day, Professor Giffard assigns a research paper on the United Nations' communications efforts. Mary Lou goes to the library and, using a library workstation, connects through the Internet with academic journals and newspaper databases, which she uses to gather her research and draft her paper. She submits her assignment through electronic mail. She receives an A.

After watching a Senate hearing on the Washington public affairs network TVW, a concerned Lewis County citizen sends an electronic message to Senator Nguyen, urging protection of Chehalis River wood duck habitat. The Senator is intrigued, and seeks information on existing wood duck programs. Using the State Library's electronic Government Information Locator Service, he finds that the Department of Fish and Wildlife has an ongoing program in which volunteers provide wood duck boxes to farmers along the Chehalis River. Through the Internet, he also gathers information about similar programs in other states. Using this information, he works with staff to draft legislation expanding the Chehalis Wood Duck program, and "drops" the bill electronically with the Code Reviser's Office. After the bill is referred to committee, the legislative staff electronically requests a fiscal note from the Office of Financial Management. OFM prepares the fiscal note showing no fiscal impact, and files it electronically in the LegLink database. The Committee schedules a hearing at which citizens in Lewis County testify from an interactive television site at Centralia College. The bill passes committee.

The service potential of information technology challenges what state government should be and how state government should work. Each of these illustrations highlights a future that pressures state government to change. The citizens of Washington play various roles in creating this need to change: as customers for government services, as taxpayers paying for government services, and as voters electing the Legislature and governor to represent their individual and collective interests. From listening to their customers, agency leaders are defining new service expectations and economic priorities.

Service expectations

In the private sector, customers expect *one-stop shopping* -- the ability to obtain diverse services in a timely, convenient and user friendly manner from a single source. It is commonplace today, with one phone call to a travel agent, to schedule a trip on an airplane, reserve a hotel room, rent a car and reserve tickets to the theater in a remote city. Increasingly, this same kind of one-stop service is demanded by citizens seeking government services and information.

Timely means that customers can obtain service when their own schedule permits. It often means “7x24 operations” -- services available seven days a week, 24 hours a day. *Convenient* means that customers obtain services with minimal effort. It means that customers do not need to travel great distances or incur great expense to obtain the services they seek. *User-friendly* means that the customer is the focal point of the transaction.

While many government agencies strive to provide efficient service to citizens, there is a perception that government is not focused on citizens as customers. Rather, as one Washington company commented when asked about the quality of government services:

People sense the chasm that exists between their commercial transactions and their government ones. Government agencies [are traditionally] inward focused – working toward efficiency and mass production. Agencies can benefit from a change to customer flow strategy because it affords real opportunities for sharing assets – people, facilities, data, information, and responsibilities....

Economic realities

Many citizens assert that government should do more with less, or, perhaps more accurately, do better without more. While demand for government services increases -- an aging state population requires increased health and social services, and an expanding state population requires additional infrastructure such as roads, prisons, libraries, and

educational institutions -- providing these services is increasingly difficult given the lack of corresponding growth of revenues available to government.

Political mandates

Washington State law states that “the primary responsibility for the management and use of information, information systems, telecommunications, equipment, software, and services rests with each agency head.”² Each agency is empowered by law to make use of information technology as it deems appropriate to meet its business mission.

However, the same law establishes limits on that autonomy. It conveys the Legislature’s intent that:

Information [must] be shared and administered in a coordinated manner...³

Resources shall be used in the most efficient manner and services shall be shared when cost-effective⁴...

[Agencies shall] maximize opportunities to exchange and share data and information by moving toward implementation of open system architecture based upon interface standards providing for application and data portability and interoperability.

[The state shall develop] state-wide or interagency technical policies, standards, and procedures⁵.

State law directs the ISB to develop a coordinated statewide IT policy. Charged with overseeing the acquisition and use of information technology by state government organizations, the ISB plays an important role in creating an efficient, shared technology infrastructure to deliver government services and streamline government processes. Yet it is the fundamental premise of this strategic plan that creating a state IT infrastructure is the shared work of all state government organizations.

Legislative and executive calls for coordinated planning, shared use, and non-duplication of IT resources have been heard repeatedly since publication of the 1993 Strategic Plan. A legislatively-created task force on public electronic access to public records found in 1995 that:

² RCW 43.105.107 (3).

³ RCW 43.105.017 (2).

⁴ RCW 43.105.017 (4).

⁵ RCW 43.105.017 (8).

⁶ RCW 43.105.041 (3).

Governments should balance the need for individual agency technology planning and the need to coordinate such planning across agency boundaries.⁷

The Legislature in 1996 approved funding for a statewide K-20 educational telecommunications network after stating:

It is the intent of the Legislature to make maximum use of a common telecommunications backbone network in building and expanding education technology systems. Therefore, coordinated policy and planning to ensure program quality, interoperability and efficient delivery are the highest priority to the Legislature.⁸

Also in 1996, the Governor's Telecommunications Policy Coordination Task Force published its finding that:

existing interagency coordination of government telecommunications planning, through the auspices of the ISB, adequately balances individual agencies' need for flexibility with the state's interest in coordination of technical standards, integration of systems and resources, and cost accountability. However, it is concerned that the goals and benefits of such coordination are frustrated where government entities act outside the technology coordination process. It is imperative that the state's telecommunications systems work as a wholly integrated and nonduplicative network that can be accessed and shared by state agencies and local governments to the maximum extent.⁹

The service expectations of citizens, the economic constraints facing government, and state law and policies all direct agencies to coordinate IT planning and avoid duplication of IT resources.

⁷ Public Information Access Policy Task Force *Report and Recommendations: Encouraging Widespread Public Electronic Access to Public Records and Information Held by State and Local Governments*, December 1, 1995, p.1.

⁸ E2SSB 6705, Sec. 1.

⁹ Governor's Telecommunications Policy Coordination Task Force *Building the Road Ahead: Telecommunications Infrastructure in Washington State* April 1996, p.14.

III. Updating the 1993 Strategic Information Technology Plan

In January 1993, DIS published the *State of Washington Strategic Information Technology Plan* as required by the Information Technology Act of 1992. This document was intended to be “a point of reference for the individual agency strategic plans, agency performance reports, and statewide performance reports on information technology.”¹⁰ It set forth a statewide mission statement for information technology within state government and contained four goals common to all state agencies. Associated with the four goals were 25 strategies which gave guidance to individual agencies about how to develop their individual strategic plans. These goals and strategies are discussed below.

The passage of three years, the completion of the 1993-95 performance review of agencies’ use of IT, legislative mandates, findings by the Governor’s Telecommunications Policy Coordination Task Force, and the dynamics within the information technology industry prompted DIS to review the original plan in 1996.

The 1996 plan, which assumes a planning horizon of one to three years, is based on information obtained from diverse sources. First, it incorporates the results of the biennial performance report on agencies’ use of information technology published in 1996.¹¹ Second, it draws on interviews with more than 50 information technology managers representing 31 state organizations, who provided an assessment of the opportunities and challenges facing agencies deploying information technology. Third, it draws from the state’s major private-sector information technology business partners, who provided their perspectives on trends and strategies within the IT industry.

Finally, it draws on perspectives provided by more than 30 agency executives, legislators, educators, and other state policy leaders who met in Olympia on May 1, 1996, for an information technology planning summit. Participants addressed policy issues related to information technology planning, including the continued viability of the goals and strategies contained in the 1993 plan.

A list of participants is contained in Appendix A.

The structure for gathering and organizing data for this plan is built from a planning model described in Appendix B.

¹⁰ *State of Washington Strategic Information Technology Plan* January 1993, p.1.

¹¹ Performance Report, p.1.

ASSESSING THE 1993 PLAN

In the 1993-95 biennial performance report, DIS reviewed the state's progress toward meeting the four goals of the 1993 Strategic Plan. The report found that the public IT community was providing solid support to the legislatively-mandated missions of state agencies. It found, too, that the deliberate pursuit of key technological innovations such as digital signatures and shared infrastructure was positioning the state well for the 21st Century. However, given the growing demands for government services and the risks associated with rapid technological change, the report urged "continued vigilance to ensure proper stewardship of public resources."¹³

The report chronicled how agencies have deployed information technology to meet increased demand for services from a growing population. It provided detailed reviews of projects supporting each of the four goals in the 1993 strategic plan.

Goal 1: Improve service delivery to the public through the use of information technology.

Successes in service delivery have come as a result of the need for faster communications and streamlined business and decision-making processes. Strategies in the 1993 plan focused on having agencies leverage technology to improve service delivery. Technologies which led to new services included video teleconferencing, document imaging, automated telephone response, fax-back and electronic mail systems. DIS worked with several agencies in the successful pilot of electronic kiosks, which are now positioned for direct delivery of services and information to the public.

Agencies made increasing use of technology to facilitate public participation in government. Some agencies conducted forums which used video and telecommunications technologies to solicit public comment on proposed changes in policy and practices. Many agencies used the Internet to make state laws, legislative activities and agency regulations available to the public.

Agencies have also made progress in standardizing systems to reduce costs and improve service. In what has become known as the "Vanilla Project," DIS worked with 159 agencies using mainframe computing services to streamline and standardize the software programming technologies they use. The completion of the project significantly reduced the time required to release new services.

Perhaps the most significant development has been the agencies' use of the World Wide Web, the graphical user interface that adds multimedia

¹² Id.

capabilities to the Internet. While the Web was still in its infancy when the first Strategic Plan was published, it has grown phenomenally in the intervening three years, and is still growing. For example, Home Page Washington¹³ serves as a clearinghouse for more than 80 state government Web sites, providing a broad range of government-related information -- including laws, legislation, agency contracts, and schedules of public meetings -- to the public over the Internet.

Quality service delivery is a continuing effort and thus a permanent goal to be included in agency strategic IT plans.

Goal 2: Make information more accessible through an affordable, shared and widely-available communications infrastructure.

The 1993 Strategic Plan identified several strategies in support of this goal, including ongoing infrastructure development, public access to information, security and privacy protections, and the use of open technology standards to facilitate data sharing and electronic commerce development. Since 1993, Washington State has made significant progress in this area.

The emergence of the Internet and advances in network and computing technologies has improved communication among agencies and with the public. Agencies report a 23 percent increase in use of the statewide TCP/IP protocol, the state standard for network connectivity. At least three-quarters of the personal computers used today in state government are connected to local and wide-area networks.

Through leveraged purchasing, DIS continues to provide cost-effective telecommunications services to state agencies. The State Controlled Area Network (SCAN), for example, saves state agencies more than \$2 million per year compared to the costs of comparable services purchased separately.

The Public Information Access Policy Task Force, created by the Legislature in 1994, recognized the progress made by the state in using advanced networking and computing technologies to provide improved citizen access to government information. More than 80 state agencies have developed Internet home pages. State laws, pending legislation, on-line job and property searches, passenger ferry and railroad schedules, traffic reports, and transportation plans are examples of information available on the Internet.

Fax-back services, such as that introduced by the Department of General Administration (GA) in 1994, have dramatically cut the turnaround time for responding to business and citizen requests for

¹³ <http://www.wa.gov>

information. Using an automated telephone system, the GA service automatically faxes out the latest version of any state contract requested by vendors or agencies. By one estimate, costs of contract management have been reduced by 66 percent because the handling costs of conventional mail have been eliminated. To further support acquisition improvements, DIS administers an Internet site containing Requests for Proposals, statewide Master Contracts and acquisition policies.

Many agencies provide government information to the public through telephone-based services. For example:

- Washington universities and community and technical colleges allow students to register for classes, check their grades and review their financial aid status;
- The Department of Labor and Industries provides injured workers information regarding their claims status;
- The Department of Employment Security allows the public to check job listings;
- The Department of Transportation allows travelers to check mountain pass conditions;
- The Department of Licensing allows citizens to obtain business records information; and
- The Washington State Lottery allows the public to check winning lottery numbers.

Improving information access is also a continuing goal to be addressed in agency strategic plans.

Goal 3: Use Information Technology to respond to changing business requirements.

State agencies have made significant progress toward this goal by streamlining acquisition processes, developing strategic alliances, initiating innovative pilot projects and selectively outsourcing some information services.

According to some estimates, state and local governments are spending more than \$500 million per year on information technology in Washington. In the past, the infrastructure elements -- the network components, platforms, base operating systems, data management software management tools, backup and recovery processes, security systems, and applications -- were designed to address specific and localized agency needs, without regard to interoperability with other agency systems.

The ISB and DIS have played critical roles in integrating these disparate technologies. The ISB established state networking and

architectural standards, and is currently addressing standards for video-conferencing and electronic commerce. In April 1995, the ISB adopted its revised statewide information technology acquisition policy, which seeks to “promote the use of open, vendor-neutral specifications and standards to ensure that acquisitions support agency strategic directions and state information technology standards.”¹⁴

Several agencies have continuing forums to exchange and share information about mutual business needs and the use of common infrastructure. The Legislative Transportation Committee has convened a group of executives and IT managers from the Department of Transportation, Washington State Patrol, and the Department of Licensing who meet regularly to discuss mutual concerns and coordinate IT strategies. The Washington State Geographic Information Council is a voluntary consortium of state, local, and federal government entities that coordinates state policies concerning geospatial information. During the 1993-1995 biennium, participation on the Council expanded significantly. The Interagency Infrastructure Work Group (IIWG), with members drawn from the Office of Financial Management, the Department of General Administration, the Department of Personnel and DIS developed and recently implemented a shareable and common electronic mail infrastructure.

If the delivery of service is to be greatly enhanced, this type of coordination and cooperation must continue and expand. The plan therefore reaffirms this goal.

Goal 4: Invest in people, tools, methods and partnerships necessary to improve knowledge and skills of the human resources with the IT community.

Policy makers and IT managers identified two challenges in obtaining the resources needed to make technology work well for government.

- *Agencies’ resource needs are shifting from purely technical skills, such as programming, to a mix of technical, business, and communication skills, such as system integration, architecture, and project management.*

Agency leaders see the need for better business analysts who understand the complex tasks that many agencies perform, architects who can connect the business requirements with the technology infrastructure, systems integrators who can plug the IT parts together to achieve predictable results, and project managers who can assure projects deliver on time, within budget, with product quality. Agency

¹⁴ Department of Information Services, *Acquisition and Disposal of Information Technology Resources in Washington State Government*, April 1995, p.1.

leaders are particularly interested in improving project management skills.

- *Skilled technical resources are hard to find and hard to retain.*

State agencies are concerned about finding and keeping employees with IT skills. They note that existing pay structures in the public sector lag behind these in the private sector, resulting in shortages of critical technical skills in the industry, including distributed systems architects, security specialists, and successful systems integrators. Many agencies are filling technical gaps by outsourcing.

The policy makers surveyed agreed that a commitment to invest in people, tools, methods and partnerships is a primary strategy to achieve each agencies' strategic business goals for the use of information technology.

Each agency must determine from its own unique profile of skills and requirements the appropriate mix of investments to meet its needs. Consequently, this plan acknowledges the continued need to "invest in people, tools, methods, and partnerships," to ensure that the IT community has the necessary skills and resources to provide quality IT services to government and citizens.

SURVEY OF POLICY MAKERS AND GOVERNMENT INFORMATION TECHNOLOGY PROFESSIONALS

During 1996, DIS interviewed more than 50 state agency IT management professionals to hear their experiences and learn their concerns about state governments use of information technology. DIS subsequently invited more than 30 policy makers -- including agency directors, legislators, educators and others -- to a "planning summit" to discuss their expectations for statewide strategic IT planning. These policy makers reviewed the information collected in the interviews with IT managers, and largely affirmed the goals and with some changes, the strategies contained in the 1993 plan.

The participants were asked three fundamental questions:

- *What kinds of changes to business practices do government agencies anticipate in the next few years?*
- *What information technology issues require coordinated development across agencies to meet the anticipated changes?*
- *What are the roadblocks and challenges that impede progress in achieving agency IT goals?*

The following is a summary of the findings:

1. What kinds of changes to business practices do agencies anticipate in the next few years?

Both policy makers and IT managers predicted that federal government funding priorities and process changes will strongly affect key agencies:

- The Department of Social and Health Services (DSHS) and the Department of Employment Security (ESD) anticipate that block grants will push decision making to the local level.
- The Department of Labor and Industries predicts that federal Occupational Safety and Health Administration (OSHA) rules and regulatory changes will have a great impact on risk management processes. Rule changes will require changes to the decision logic of current systems.
- The Department of Ecology (DOE) predicts that the federal Environmental Protection Agency will require it to address such issues as clean water with more comprehensive measurements. IT support systems have to be integrated to supply the information needed for such measurements.

Agencies anticipate that demand for government services will increase without corresponding increases in funding:

- Washington is one of the fastest growing states in the nation. Increased population puts more demand on IT systems and infrastructure.
- An aging state population is placing greater demand on health care and social services. Without additional resources, agencies must find efficiencies to meet this demand.
- Citizens demand government information in more customized formats.

Agencies anticipate that they will increasingly need to share resources and interoperate:

- The demand for “one-stop shopping” puts pressure on current systems and processes originally designed to meet the production needs of individual agencies.
- The Legislature has made increased higher education enrollment a priority. Washington’s rapidly expanding population will require the employment of new technologies and a concerted effort to share resources.
- DNR, DOE and the Department of Fish and Wildlife must work together to preserve Washington’s natural resources and maintain air and water quality. This requires them to share information and resources without regard for their historic organizational boundaries.
- Efficient law enforcement and judicial processes require coordination at various levels -- state, local and federal -- in many jurisdictions.
- Public and political pressure to localize decision making -- sometimes called “community-based claims” -- is creating new customers and new demands for data collected by DSHS and Labor and Industries.

2. *What information technology issues require coordinated development across agencies to meet the anticipated changes?*

State policy makers and IT professionals identified several specific areas that required coordinated development within state government and among the various levels of government.

- ***Data Sharing***

State policy makers, echoing IT managers, determined that one of the most important contributions a centralized planning function can achieve is to develop standards to promote data sharing. They recognized a growing need both to provide and receive data from many sources and in many formats.

However, they also recognized that the existing environment is not working very well. Agency data is often stored in a form that is not easily accessible. Traditional solutions to move electronic data across disparate technologies have proven costly and time consuming. New data access concepts such as Internet search tools or their intranet equivalents may provide technical solutions, but agency leaders are

wary of miracle cures. Shared planning and collaboration are needed to identify technological challenges and find solutions.

- ***Public Access and Privacy***

Government leaders expressed particular concern about the impact of information technology on personal privacy. They concluded that open access to state information must be balanced with the rights to individual privacy and confidentiality. Strategic IT planning, they said, must address this balance.¹⁵

- ***Standards***

Agency IT managers see many positive benefits associated with standards, which they say bring coherence to a computing environment. Standards create predictable architecture which ensures the manageability, portability, and interoperability of the elements.

The benefits of standardization, however, are countered with concerns about the risks of setting state standards prematurely or too restrictively. Agencies are cautious about adopting standards which may not be adopted in the private sector or elsewhere in government. Policy makers surveyed voiced similar concerns, but concluded that “even ‘different’ standards need to be compatible.” In other words, they see integration and interoperability as paramount concerns. They recommend cooperative planning and collaboration among agencies, with the continued oversight of the ISB, as the best approach to standards development.

- ***Costs***

Several agency IT managers are concerned that the lifecycle costs of technology are not fully understood by government leadership. Some agencies have made major investments in personal computers and networks, only to find that later as the technology ages, releases of new software often require upgrades in hardware. In distributed applications, the complex interrelationship of technologies has made IT cost models more complicated and dynamic.

- The problem of understanding full cost is exacerbated as agencies convert to buying “turnkey” packaged solutions -- solutions which are being sold as a combination of application software and hardware platform. While turnkey solutions are attractive to agencies, they carry risks that their underlying technologies do not

¹⁵ On March 30, 1996, Governor Mike Lowry convened a work group to review current state practices and policies related to commercial access to public records. During 1996, the Governor’s Work Group on Commercial Access to Government Electronic Records addressed privacy issues in the context of developing consistent statewide policies for the exchange of data among agencies and with the private sector.

fit well with the existing infrastructure. Identifying the full costs of an IT solution, including integration and annual support, is a critical component of agency technology planning.

- ***Architecture***

Several agency directors expressed concern that limitations in system architecture may prevent information from being shared among various program centers. They acknowledge the need to better leverage information through improved system architecture. Several agencies have created their own initiatives to develop an architectural understanding of the technologies that have been deployed.

3. *What are the potential obstacles to progress in achieving agency IT goals?*

Planning summit participants identified several concerns which they believe agencies must address to obtain maximum benefits from information technology. These are:

Concerns which bear on the structural process of government or require significant legislative action to modify existing law.

Examples:

- Addressing privacy and commercial access issues associated with public records in electronic format.
- Coordinating funding processes with cross-discipline IT initiatives.

Concerns which bear on agency collaboration and collective dialogue. Examples:

- Identifying areas where agencies share interests and should work together.
- Developing statewide standards for data sharing across agencies.
- Rendering non-restricted government information in a manner readily accessible to the public.
- Finding, training and keeping people with strong IT technical and project management skills.

Concerns which bear on agency awareness of state infrastructure guidelines and policies. Examples:

- Anticipating and preparing for rapid technological change.

- Avoiding commitments to technologies which have limited future use.

INDUSTRY PERSPECTIVES ON GOVERNMENT INFORMATION TECHNOLOGY PLANNING

In preparing this plan, DIS surveyed several private telecommunications and information technology companies to learn their views regarding technological developments, IT deployment strategies, and the challenges faced by their customers in purchasing, using and maintaining information services.

What are the current global issues in information technology?

The private companies agreed that information technology is bringing profound change to business and government. IT enables organizations to focus on customer service rather than internal processes, allowing all parts of an enterprise to join in understanding and meeting customer needs.

Companies surveyed identified data access, improved networking, deployment of distributed client/server architecture, and Internet use as key issues facing IT providers and customers. The rapid developments in these areas are adding to the challenges of finding and maintaining a skilled work force.

What technologies hold great promise for the future?

Companies generally agreed that IT systems will be networked using both land-line and wireless technologies. These networked environments will enable users to obtain ready access to government information from many interconnected sources.

Every company surveyed anticipated major developments in electronic commerce (EC). They recognized that the Legislature passed landmark legislation in 1996 to enhance international and domestic trade in Washington through the use of “digital signatures” in electronic transactions, a basic component of EC¹⁶.

What strategies are fundamental for leveraging information technology?

Most of the companies responded that the need to align business and state IT strategy, confirming that agencies’ business requirements must drive the IT strategy. At the same time, many companies devoted significant attention to developing an open architecture.

¹⁶ “Washington Electronic Authentication Act,” SB 6423 (1996).

Not surprisingly, many companies remarked that partnerships between government and the private sector are critical to both as they seek to succeed in the constantly changing IT environment. They also identified the development of skills and competencies among employees as a critical strategy.

The views of the private companies surveyed track well with those expressed by government leaders and managers. They agree that agencies' and private companies' business needs must drive IT decisions, and that common architecture principles and standards must be developed. They agree that employee training must be available to ensure a skilled work force. They agree that public-private partnerships should be promoted. Above all, they agree that customers should be the focus of agencies in providing IT services.

SUMMARY

The following table compares the historic and future IT environment in state government:

	Historic Environment	Future Environment
<i>Systems</i>	Closed, proprietary	Open, interoperable, portable
<i>Planning</i>	Agency specific, often “reinventing the wheel”	Builds on the success of others
<i>Resource Utilization</i>	Volatile, suboptimal	High
<i>Application Development</i>	Ad hoc, limited reusability	Reusable software, continuous quality improvement
<i>Architectures</i>	Diffuse, eclectic	Standardized
<i>Procurement</i>	Agency specific	Leveraged through aggregation
<i>Training</i>	Agency specific	Standardized and leveraged
<i>Maintenance and support</i>	Many contracts	Standardized contracts and approaches

Planning summit participants acknowledged that even though each agency has distinct goals and objectives, its use of information technology to meet those objectives should use an infrastructure that is shared, flexible to change, and open to new technology.

They agreed, too, that the ISBand DIS should continue to strive for an approach to IT deployment which:

- supports agency innovation;
- ensures agency accountability
- maximizes interoperability;
- minimizes duplication of networks and services;
- encourages shared use of common resources; and
- ensures that the state leverages its purchasing power.

Cross-agency strategies to define a common architectural framework and statewide standards will help agencies configure and construct their individual system resources in a way that can be easily shared and

integrated. Efforts to leverage the investment power of the state will help control costs. Developing a skilled work force is a prerequisite to operational success.

In addition, many IT managers are concerned that because of the constant changes in technology, traditional IT planning cycles of three-to-five years are no longer practical or achievable. They recommend that agency IT planning be centered not on specific projects, but on how the organization is positioned to make frequent strategic decisions. This requires attention to how the organization is structured to respond to rapid technological change, how standards are set and monitored, and how changes are recognized and handled within a strategic framework.

The following pages define the mission, goals, and strategies for the statewide strategic plan for information technologies. They provide a charter setting forth infrastructure requirements for agencies, agency responsibilities in policy and standards setting, and resources offering assistance in IT planning.

IV. Mission, Goals, Charter, and Strategies

Mission of the State of Washington Strategic Information Technology Plan

The state of Washington must optimize, coordinate, and deploy state information technology resources to support and enable effective government operations and public service.

Goals for Information Technology

Goal 1: Improve service delivery to the public through the use of information technology.

Goal 2: Make information more accessible through an affordable, shared and widely-available information technology infrastructure.

Goal 3: Use information technology to respond quickly to changing business requirements.

Goal 4: Invest in people, tools, methods and partnerships necessary to improve the knowledge and skills of the human resources within the IT community.

The Information Technology Planning Charter

- 1. Each agency shall acknowledge a dual mission regarding the use of information technology -- to serve the agency's primary constituency and to contribute to and participate in the information technology infrastructure of the state.**
- 2. Each agency shall view information technology not as an end in itself, but as one alternative to be considered in deciding how to fulfill their respective missions.**
- 3. Each agency developing and deploying IT solutions shall:**
 - determine that the acquisition and implementation of technology is driven by a business need or plan;
 - consider whether the IT technology solution selected is the most "proven" and least speculative available;
 - where technologically feasible, build on existing infrastructure meeting state standards;
 - determine whether the deployment of new or additional information technology requires investment in developing or

acquiring new skills by members of the agency work force whose jobs have been impacted by the new technology;

- acknowledge that information technology must be managed as part of a larger system of disciplines: management, security, recovery, performance, and utilization.
- demonstrate that the IT option is selected based on cost/benefit analysis;
- acknowledge that there are annual costs for operations and maintenance, and costs for periodic upgrades and refurbishment; and
- affirm that the IT selected is compatible with the existing state infrastructure.

4. Each agency deploying information technology shall adhere to information technology standards:

- as determined and approved by the ISB; or
- which foresee, in the absence of defined ISB standards, the greatest ease of interconnection with the state's IT infrastructure, and are consistent with *de facto* market standards and which employ open interface standards.

5. Each agency shall seek to provide avenues of low-cost public access to non-restricted government information when designing new systems and/or applications.

6. Each agency shall measure the financial and service benefits of information technology as determined by state law or ISB policy.

7. Each agency seeking to acquire information technology shall consult with other agencies to leverage purchasing and assure alignment with IT infrastructure.

Statewide Information Technology Strategies

The following table lists the strategies to be used by agencies to accomplish the goals of this strategic plan. The strategies contained in the 1993 strategic plan have been narrowed here to focus on building shareable information technology infrastructure. In some cases, the strategy requires collaboration among agencies for implementation as a state standard. In other cases, the strategy simply requires the willingness of an agency to cooperate with other agencies in the interest of reducing costs or improving service.

Strategy	Associated Goal	Status
1. Develop and maintain common computing architectural principles which assure interoperability and portability of computing resources with a minimum of special investment.	Goal 1, 2, 3	This strategy must be implemented through the joint efforts of agencies.
2. Develop technical standards that assure interoperability and allow for technology change.	Goal 1, 2, 3	Some standards have been established. See Appendix C.
3. Develop and maintain data access standards which allow agencies to share data.	Goal 2	This strategy must be implemented through the joint efforts of agencies.
4. Develop and maintain standards for the statewide use of Electronic Commerce (Electronic Data Interchange, Electronic Funds Transfer, Electronic Benefits Transfer, Digital Signatures).	Goals 2, 3	The Washington Electronic Authentication Act, SB. 6423, requires implementation in early 1998.
5. Develop and maintain policies governing Internet access and use by the public sector.	Goals 1, 2	Policies are under development.
6. Develop and maintain a statewide recognized certification for project management skills.	Goals 1, 2, 3, 4	Must be developed.
7. Develop and use common criteria for determining life-cycle costs of information technology.	Goal 2	Must be developed.
8. Leverage the purchase of information technology through aggregated buying.	Goal 2	Capability in place. Agency participation is the key success factor.
9. Leverage the purchase of training through consolidated needs analysis and aggregated buying.	Goal 2, 3, 4	DIS is preparing a process proposal for agencies.

Goals:

Goal 1: Improve service delivery to the public through the use of information technology.

Goal 2: Make information more accessible through an affordable and widely-available information technology infrastructure.

Goal 3: Use information technology to respond quickly to changing business requirements.

Goal 4: Invest in people, tools, methods, and partnerships necessary to improve the knowledge and skills of the human resources within the IT community.

Roles and Responsibilities in the IT Planning Process

At the administrative level, the IT planning process has five principle players. First, the **Information Services Board (ISB)**—a 13-member board made up of Legislators, agency directors, educators, and

representatives of the courts and the private sector -- is directed by state law to:

- develop standards to govern the acquisition and disposition of equipment, software and purchased services;
- approve IT acquisitions or set rules that delegate acquisition authority;
- develop statewide or interagency technical policies;
- review and approve the statewide IT strategic plans;
- provide oversight on large projects; and
- establish and monitor appeals processes.

The ISB is the authorizing body for the State of Washington Strategic Information Technology Plan.

Second, the **Department of Information Services (DIS)** directed by statute to:

- Review agency acquisition plans and requests;
- Implement statewide standards;
- Provide services on a cost-recoverable basis for:
 - mainframe computing;
 - telecommunications;
 - distributed computing support;
 - procurement assistance;
 - technology maintenance and support;
 - systems development; and
- Develop plans and provide support for technology initiatives and planning implementation.

Third, the **Office of Financial Management (OFM)** reviews agency budgets and makes funding recommendations regarding agency use of information technology. It also reviews fee structures for services provided by DIS.

Fourth, the **Customer Advisory Board (CAB)** is directed by statute to provide DIS with advice concerning the type, quality, and cost of the Department's services. Its members are the senior information technology leaders within state agencies. The CAB was a review point for the development of the Strategic Information Technology Plan.

Fifth, **individual agencies** have primary responsibility under statute for the management and use of their information technologies. Within the parameters set forth by the ISB and OFM, each agency must ultimately decide how information technology fits within its own agency mission and budget priorities. By statute, each agency must prepare a biennial

strategic plan setting forth its goals and strategies regarding its use of information technology.

With the exception of OFM's budget role, the statutory roles and responsibilities of these agencies overlap in several areas. The responsibilities of each of these groups is often not clearly defined by policy makers or IT professionals. As the state moves increasingly toward a shared infrastructure and away from duplicative networks and services, the roles of each agency must be clarified to ensure inter-agency collaboration and consultation.

The table below sets forth the roles assigned to organizations for the development of strategies based on:

- their Responsibility for defining and approving the outcome;
- their Accountability to the Responsible entity in delivering the outcome;
- their need to be Consulted to create the outcome;
- their need to be Informed about the outcome to assure compliance.

Strategy	Agencie s	CAB	DIS	ISB
1. Develop and maintain common computing architectural principles which assure interoperability and portability of computing resources with a minimum of special investment.	C/I	A	C/I	R
2. Develop technical standards that assure interoperability and allow for technology change.	C/I	A	C/I	R
3. Develop and maintain data access standards which allow agencies to share data.	C/I	A	C/I	R
4. Develop and maintain standards for the statewide use of Electronic Commerce (Electronic Data Interchange, Electronic Funds Transfer, Electronic Benefits Transfer, Digital Signatures).	C/I	C/A	A	R
5. Develop and maintain policies governing Internet access and use by the public sector.	C/I	C/A	A	R
6. Develop and maintain a statewide recognized certification for project management skills.	C	A	C	R
7. Develop and use common criteria for determining life-cycle costs of information technology.	I	C	R/A	C
8. Leverage the purchase of information technology through aggregated buying.	C/I	I	A	R

9. Leverage the purchase of training through consolidated needs analysis and aggregated buying.	R	C/A	A	C
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Implementation

Implementation of these strategies will begin with the approval of this plan by the ISB. Under RCW 43.105.170, agencies retain the responsibilities for developing their own IT strategic plans in concert with their general business planning cycles. DIS will continue to review agency IT plans and biennial performance reports for approval by the ISB. DIS will also produce the biennial statewide performance report assessing agency progress on the statewide goals.

The schedule for implementation of the statewide strategies will be determined by negotiation among the parties.

Measurement

Measuring the results of the goals for the statewide strategic plan will be done through the biennial performance reporting process set forth in RCW 43.105.170(3).

V. Evaluating Proposed Information Technology Plans and Projects

While information technology must serve the business needs of the individual agency that employs it, the state Legislature and the ISB expect information technology to provide maximum service at reasonable cost to the state as a whole. The Legislature and ISB therefore expect agencies to

- *improve collaboration and cooperation with each other;*
- *promote efficiency through shared resources;*
- *provide access to state information through diverse technologies; and*
- *avoid costly duplication of IT resources.*

Agencies should anticipate that the Legislature and the ISB will evaluate agency IT plans or funding requests with the agency's business mission and consistency with the state's IT infrastructure needs in mind. Agencies seeking approval of IT plans or technology funding should be prepared to address the following issues.

- 1. How will the state's citizens be served by the proposed plans or projects?***
- 2. How will the plan or project***
 - *help meet the agency's mission?*
 - *improve customer service?*
 - *reduce costs or raise revenue?*
 - *meet legislative mandates?*
- 3. Do agency executives understand the functions of the technology being proposed, the costs of the technology, and the benefits that the technology is expected to deliver? What is the track record of the technology? Has it been used successfully by others?***
- 4. Is the plan or project consistent with the state's IT infrastructure goals?***
- 5. Does the IT plan and/or project provide low-cost public access to information?***
- 6. Can the technology be shared with other agencies?***
- 7. Can the purchase of information technology or services be aggregated with that of other agencies?***

This list is not intended to be exhaustive. Rather, it is intended to provide notice to agencies of the major concerns of state policy makers -- both legislative and executive -- with regard to agency acquisitions of information technology.

VI. Where to Get Assistance

Agencies can find assistance in complying with this plan from the following sources:

For questions regarding DIS, the ISB, or the CAB.	Contact: DIS Communications Office, (360) 407-0530.
Infrastructure Planning and Deployment Issues.	DIS Strategic Computing and Planning Division, (360) 902-3560.
Mainframe computing issues, including rate projections, scheduling, new capacity needs.	DIS Computing Services Division, (360) 902-3100.
Telecommunications and network issues including telephone service, backbone access, network gateways, Internet access, Home Page Washington.	DIS Telecommunications Services Division, (360) 902-3330.
Video conference services and television broadcast.	DIS Communications and Video Technologies, (360) 407-0130.
IT project planning and oversight.	DIS Office of Information Technology Oversight (OITO), (360) 902-3560
Policy.	Policy for IT deployment is developed by the ISB and contained in the Information Technology Policy Manual published by the DIS Strategic Computing and Planning Division, (360) 902-3557.
Procurement.	Master contracts for procurement are created and maintained by the Brokering and Contracts Group in DIS. For procurement assistance contact the DIS Office of Information Technology Oversight (OITO), (360) 902-3557.
Agency Strategic Plans, Performance Reviews, Statewide Performance Reviews.	DIS maintains a library of agency plan and performance reviews, (360) 902-3566.
Information about State IT Standards.	IT standards are contained in the IT Policy Manual. Contact the DIS Strategic Computing and Planning Division, (360) 902-3566.
Training.	Training assistance is available through DIS, (360) 407-4347.

Appendices

Appendix A: Contributors to the Plan

Participants in the May 1, 1996, Information Technology Planning Summit

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Office of Financial Management

Gary Robinson
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Washington State House of
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Member of Information Services Board

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Agency Information Technology Professionals

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Michael Bieker	State Lottery Commission
Alvin Bloomberg	Department of Natural Resources
Jerry Boles	Western Washington University
Rose Bossio	Department of Health
Phillip Coates	Department of Fish and Wildlife
Steve Collins	Department of Corrections
Rick Coplen	Office of the Administrator for the Courts
Samuel B. Crawford	Office of the State Treasurer
Jeanne Crisp	Washington State Library
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Phil Grigg	Department of General Administration
Dennis Haarsager	Washington State University
Scott Koura	Department of Transportation
Pete Leonard	Washington State Library
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Bob Marlatt	Department of Licensing
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Muriel Oakes	Washington State University
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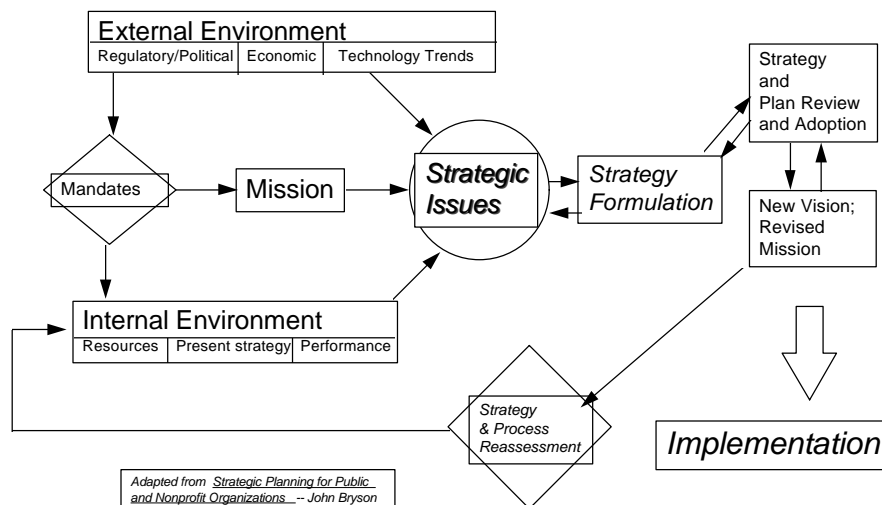
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Dave Kirk	Manager, Strategic Initiatives
Steve Kolodney	Director
Mike McVicker	Assistant Director, Computer Services Division
Todd Sander	Assistant Director, Strategic Computing and Planning Division
John Saunders	Director, Office of Information Technology Oversight

Private Sector Representatives

AT&T Wireless
Bay Networks
Digital Equipment Corporation (DEC)
Hewlett-Packard
IBM
Informix
Intel
Microsoft
Sybase
Technology Management Group (TMG)
US WEST Cellular
US WEST Communications
Unisys

Appendix B: Strategic Planning Process Diagram

The diagram below shows the process used as the basis of this plan.



Source: adapted from John Bryson Strategic Planning for Public and Non-Profit Organizations Jossey Bass Publishers, 1995.

Appendix C: Approved State Standards

The Information Services Board for the State of Washington is authorized to “develop state-wide or interagency technical standards” (RCW 43.105.041). As of the date of this report the ISB has adopted these sets of technical standards which apply to computing and telecommunications services:

<u>Description</u>	<u>Standard</u>
Host level Computer Operating System.	370/390 architecture MVS/CICS
Distributed “client/server” operating systems.	Windows, Windows NT, OS/2, UNIX POSIX compliance
Data Base Systems.	ANSI-89 SQL
Telecommunications wiring for building pathways and state office buildings.	Work area - UTP or Fiber Intrabuilding - Fiber Interbuilding - Fiber
Inter-networking standard for interoperability among state telecommunications networks.	Transmission Control Protocol/Internet Protocol - (TCP/IP)
E-mail.	Simple Mail Transport Protocol (SMTP), MIME, RCF-822

For more information see **Information Technology Policy Manual** ‘*Computing Architecture of Washington State Government, September 1994.*”

Appendix D: Glossary

Customer Information Control System (CICS) An IBM systems software product that enables transactions entered from remote terminals to be processed concurrently by applications programs. Also referred to as a teleprocessing monitor, CICS is one of the components of the host level computing standards.

Client/server architecture Essentially a software defined method of computing. A concept of application deployment that functionally distributes "application execution" as dispatchable units of work assigned to a network of servers (resources) that respond to the initiating client. Client/server embodies the general concepts of cooperative processing, distributed processing, and networked processing.

Customer Advisory Board (CAB) A board made up of DIS state agency, educational institution, and local and county government customers which advises DIS about the type, quality, and cost of the Department's services. (RCW 43.105.055)

Data integrity- The accuracy, validity, and consistency of data.

Database-2 (DB2)- IBM's product for general purpose information storage, including database management. A reasonably complete implementation of relational technology.

Disk Operating System (DOS) Usually refers to MS-DOS, the Microsoft operating system for Intel 80x86-based personal computers. DOS, like other operating systems, manages the flow, entry, and display of software and data to and from the various parts of the computer system.

Electronic commerce (EC) A broad term which describes the electronic exchange of business data between two or more organizations' computers. The primary technology goal of EC is to integrate the vast network of business and government organizations into a single secure community that has the ability to communicate with each other across any computer platform.

Electronic mail (E-Mail) Any communications service that permits the electronic transmission and storage of text messages.

Feasibility study- A structured, modular, analytical process to test a technical, financial or business function hypothesis at an early stage of development.

Fiber - Thin strands of transparent and translucent glass (or plastic) through which light is transmitted. The light source may be a laser or light-emitting diode (LED). Cables made of optical fiber generally have a much greater bandwidth (information carrying capacity) than traditional metallic cables.

Host-level computer - A large "mainframe" processor defined in the ISB computing standards as a system used "for state government administrative information processing applications having large data and transaction volumes and requiring significant staff support."

Information infrastructure The computerized networks, intelligent terminals, and accompanying applications and services people use to access, create, disseminate, and utilize digital information. A critical part of the infrastructure are the skills and talents of the people who design and operate the technologies which supply business solutions.

Information technology The equipment, software, services, and products used in storing, processing, transmitting, and displaying all forms of information. Information technology includes data processing, office automation, multimedia, and telecommunications.

Integrated communications infrastructure The network structure essential to move information in many forms (telephone calls, high-speed data communications, or television images) across geographical barriers.

Interactive communications Sharing information in "real-time." A telephone call is an example of interactive communications today; in the future television may become a device for interactive communications.

Kiosk - An extension of the automated transaction machine (ATM) concept which disseminates information and service through the use of touch-screens, motion video and stereo audio to the public. Current applications include destination locators in corporate lobbies, consumer education kiosks in stores, and government information kiosks.

Local Area Network (LAN) A data transmission facility connecting computers and other communicating devices over a short distance (typically within a building or campus) under some form of standard control.

Legacy systems- Computing and communications systems which created and maintained using centralized hierarchically-based computing resources.

Multimedia- The blending of the audiovisual power of television with the interactive power of computers to create a new vehicle for communications. Multimedia applications allow almost all forms of information (text, sounds, and pictures) to be translated into digital information. Users interact with the computer using a variety of familiar interfaces such as touch, sound, and full-color, full-motion video.

Multimedia technologies The digital integration of text, sound, graphics, and video.

Multiple Virtual Storage (MVS) IBM's flagship operating system. Essentially all device support, software functions, time-sharing aids, and reliability improvements produced by IBM are available with MVS.

Open standards profile A framework of nonproprietary specifications that defines interfaces, services, protocols, and supporting data formats.

Operating system- Software that manages the flow, entry, and display of utilities, applications software and data to and from the various parts of the computer system.

Operating System/2 (OS/2) IBM's operating system which features integrated communications and database facilities.

POSIX - The Institute of Electrical and Electronics Engineers (IEEE) standard for a portable operating system interface for computer environments. This Unix-based standard has been adopted as a Federal Information Processing Standard.

Structured Query Language (SQL) A relational data language that provides a consistent, English keyword-oriented set of facilities for query, data definition, data manipulation and data control. It is a programmed interface to a relational database management system.

Strategic Planning - The disciplined effort to produce the decisions and actions that shape what an organization is, what it does, and why it does it.

Transmission Control Protocol/Internet Protocol (TCP/IP) TCP/IP describes a set of protocols or rules used for interconnecting computer equipment. These protocols allow dissimilar operating systems to share services and data. TCP/IP is the state's standard for connecting heterogeneous computers. TCP/IP protocols are non-proprietary, and non-copyrighted.

Telecommunications RCW 43.105.020 defines "telecommunications" as "the transmission of information by wire, radio, optical cable, electromagnetic, or other means."

Telecommuting - The partial or total substitution of telecommunications (and possibly computer technologies) for the daily commute to and from work. Telecommuting is a form of decentralized work.

390 - Generic term for IBM's mainframe architecture. Computers with 390 architecture use bipolar (Emitter Coupler Logic) or CMOS processing architecture, MVS and OS/390 operating systems, and fiber loop connectivity for storage.

Unix - A widely-used family of computer operating systems known for its relative hardware independence and portable applications interface. Unix is a registered trademark, licensed exclusively through X/Open Company, Ltd., an Open Systems standards branding agent based in the United Kingdom.

Video telecommunications The electronic interconnection of two or more sites for the purpose of transmitting and/or receiving visual and associated audio information.

Wide Area Network (WAN) A data transmission facility connecting geographically dispersed (typically across the state, nation, or world) computers and peripheral devices under some form of standard control. Physically separate LANs are often logically linked through a WAN to allow transparent access to remote information.

Windows - A software operating system written by Microsoft to manage desktop and network computing resources. Windows is a registered trademark of Microsoft Corporation.